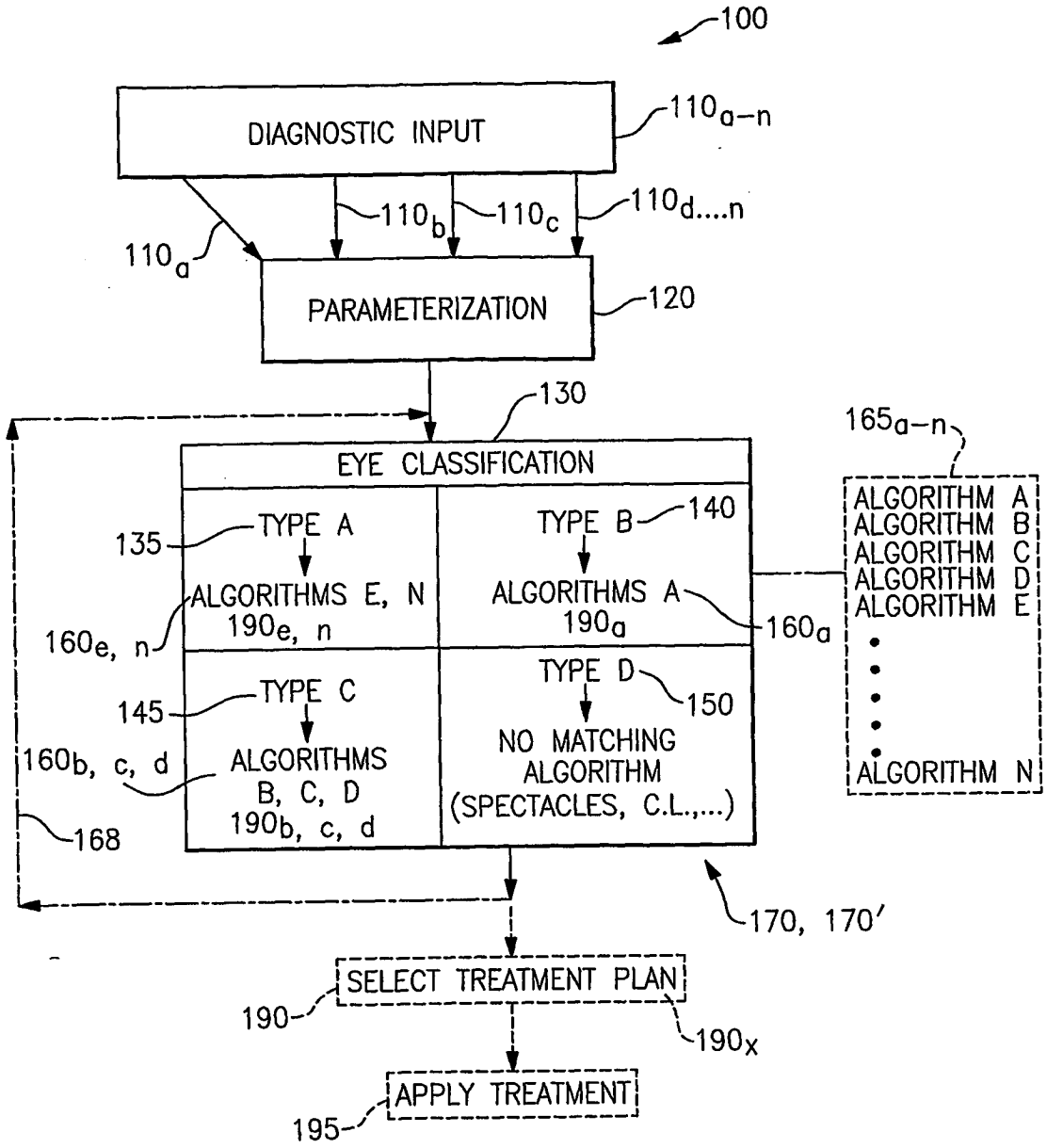
100
DIAGNOSTIC INPUT
110a–n
110a
110b
110c
110d....n
PARAMETERIZATION
120
130
EYE CLASSIFICATION
165a–n
ALGORITHM A
ALGORITHM B
ALGORITHM C
ALGORITHM D
ALGORITHM E
ALGORITHM N
135
TYPE A
ALGORITHMS E, N
190e, n
160e, n
TYPE B
140
ALGORITHMS A
190a
160a
145
TYPE C
ALGORITHMS
B, C, D
190b, c, d
160b, c, d
TYPE D
150
NO MATCHING
ALGORITHM
(SPECTACLES, C.L.,...)
168
170, 170'
SELECT TREATMENT PLAN
190
190x
APPLY TREATMENT
195

FIG.1

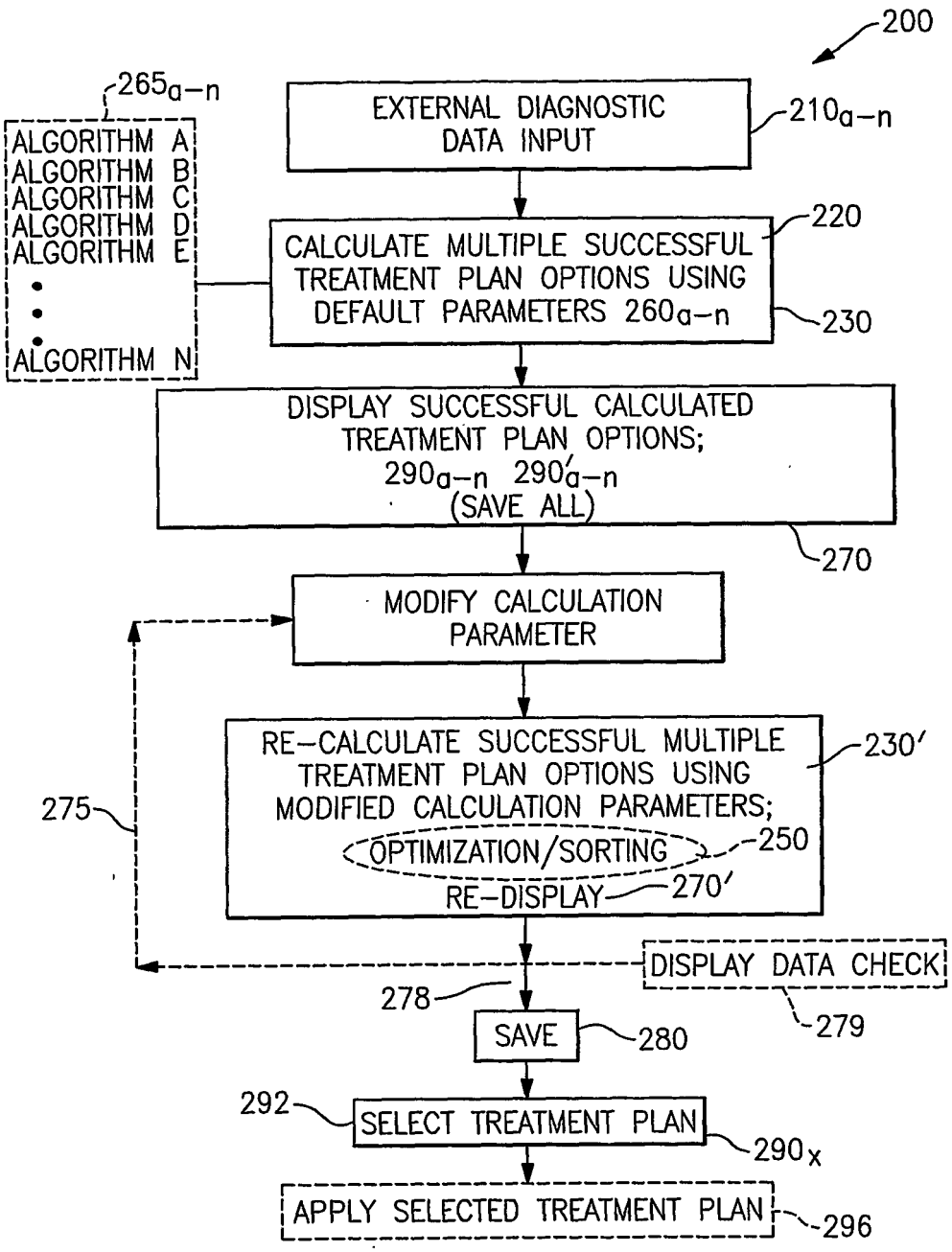
200
265a–n
ALGORITHM A
ALGORITHM B
ALGORITHM C
ALGORITHM D
ALGORITHM E
ALGORITHM N
EXTERNAL DIAGNOSTIC DATA INPUT
210a–n
CALCULATE MULTIPLE SUCCESSFUL TREATMENT PLAN OPTIONS USING DEFAULT PARAMETERS 260a–n
220
230
DISPLAY SUCCESSFUL CALCULATED TREATMENT PLAN OPTIONS; 290a–n 290'a–n (SAVE ALL)
270
MODIFY CALCULATION PARAMETER
RE–CALCULATE SUCCESSFUL MULTIPLE TREATMENT PLAN OPTIONS USING MODIFIED CALCULATION PARAMETERS;
OPTIMIZATION/SORTING
250
RE–DISPLAY
270'
230'
275
DISPLAY DATA CHECK
279
278
SAVE
280
292
SELECT TREATMENT PLAN
290x
APPLY SELECTED TREATMENT PLAN
296

FIG.2

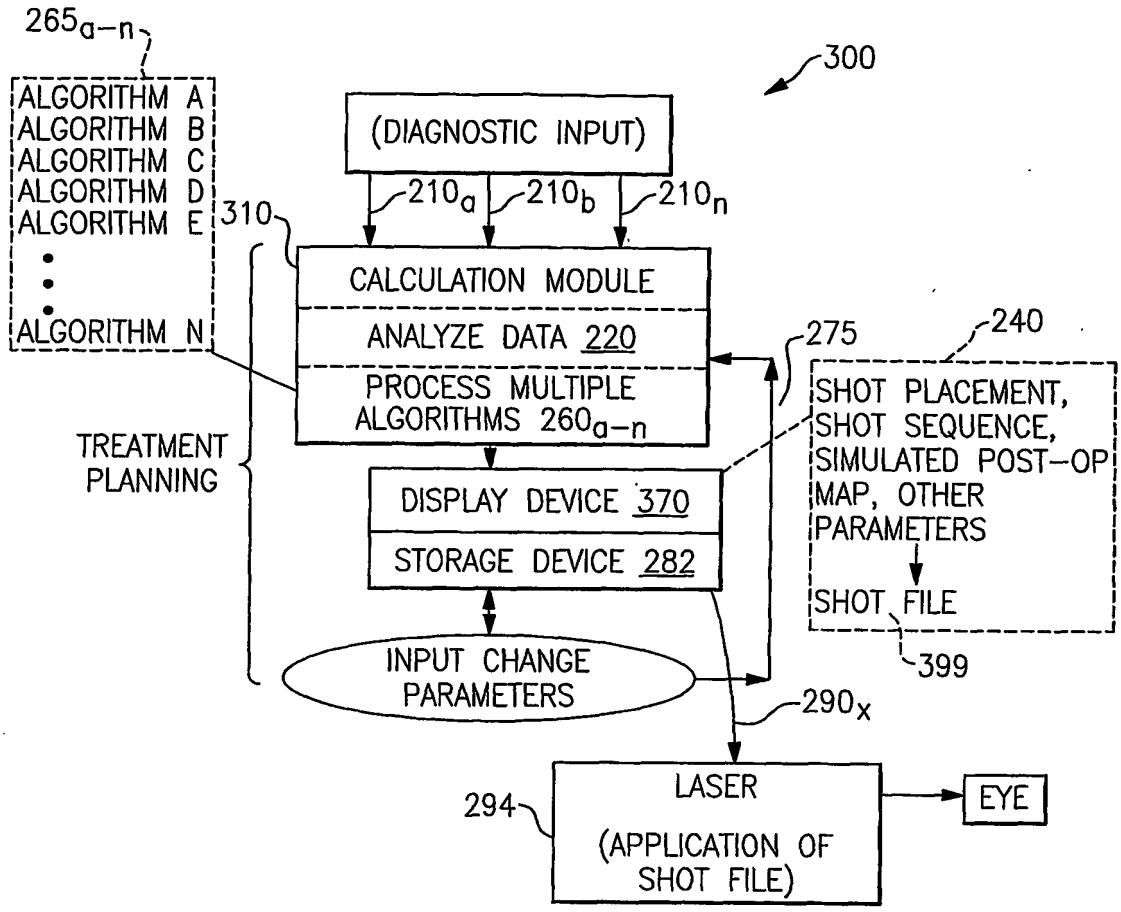
265a–n
ALGORITHM A
ALGORITHM B
ALGORITHM C
ALGORITHM D
ALGORITHM E
ALGORITHM N
300
(DIAGNOSTIC INPUT)
210a
210b
210n
310
CALCULATION MODULE
ANALYZE DATA 220
PROCESS MULTIPLE ALGORITHMS 260a–n
275
240
SHOT PLACEMENT, SHOT SEQUENCE, SIMULATED POST–OP MAP, OTHER PARAMETERS
SHOT FILE
399
TREATMENT PLANNING
DISPLAY DEVICE 370
STORAGE DEVICE 282
INPUT CHANGE PARAMETERS
290x
294
LASER
(APPLICATION OF SHOT FILE)
EYE

FIG.3

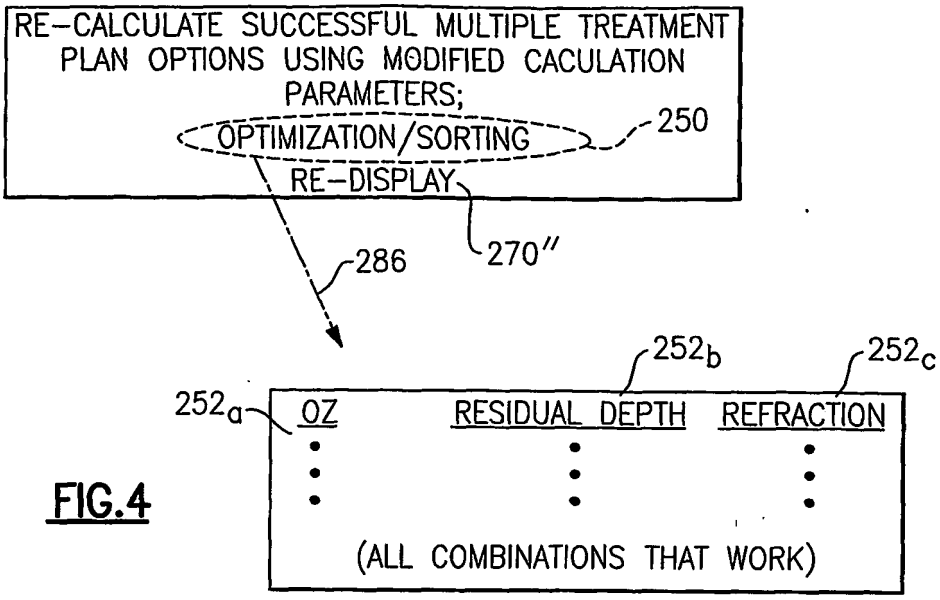
RE-CALCULATE SUCCESSFUL MULTIPLE TREATMENT PLAN OPTIONS USING MODIFIED CACULATION PARAMETERS;
OPTIMIZATION/SORTING
250
RE-DISPLAY
270″
286
252b
252c
252a
OZ
RESIDUAL DEPTH
REFRACTION
(ALL COMBINATIONS THAT WORK)

FIG.4

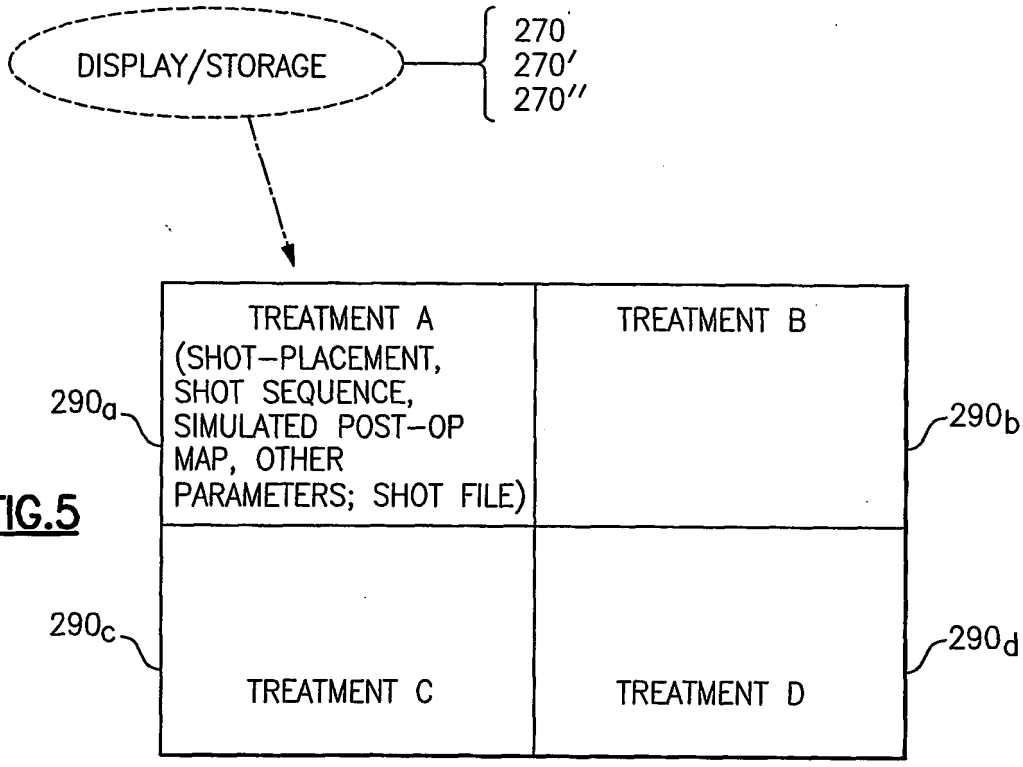
DISPLAY/STORAGE
270
270′
270″
TREATMENT A (SHOT-PLACEMENT, SHOT SEQUENCE, SIMULATED POST-OP MAP, OTHER PARAMETERS; SHOT FILE)
TREATMENT B
TREATMENT C
TREATMENT D
290a
290b
290c
290d

FIG.5

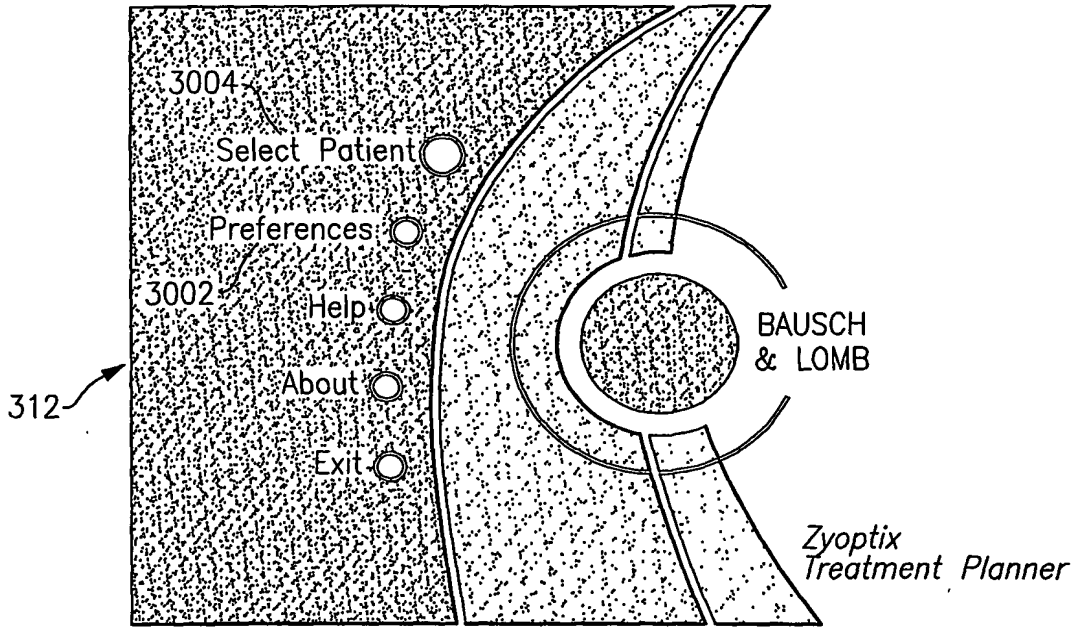

FIG.6

TABLE

PARAMETER	POSSIBLE RANGE	TYPE
SPHERE	−25 D TO +10 D	INPUT
CYLINDER	−10 D TO +10 D	INPUT
AXIS	0° TO 180°	INPUT
K−READING	33 D TO 53 D	INPUT
OPTICAL ZONE	4.5mm TO 8.5mm	INPUT
FLAP THICKNESS	0μm TO 300μm	INPUT
PACHYMETRY	300μm TO 700μm	INPUT
PUPILLOMETRY	4mm TO 11mm	INPUT
MAX. ABLATION	UP TO 250μm	OUTPUT
NUMBER OF PULSES	UP TO 9000	OUTPUT

FIG.19

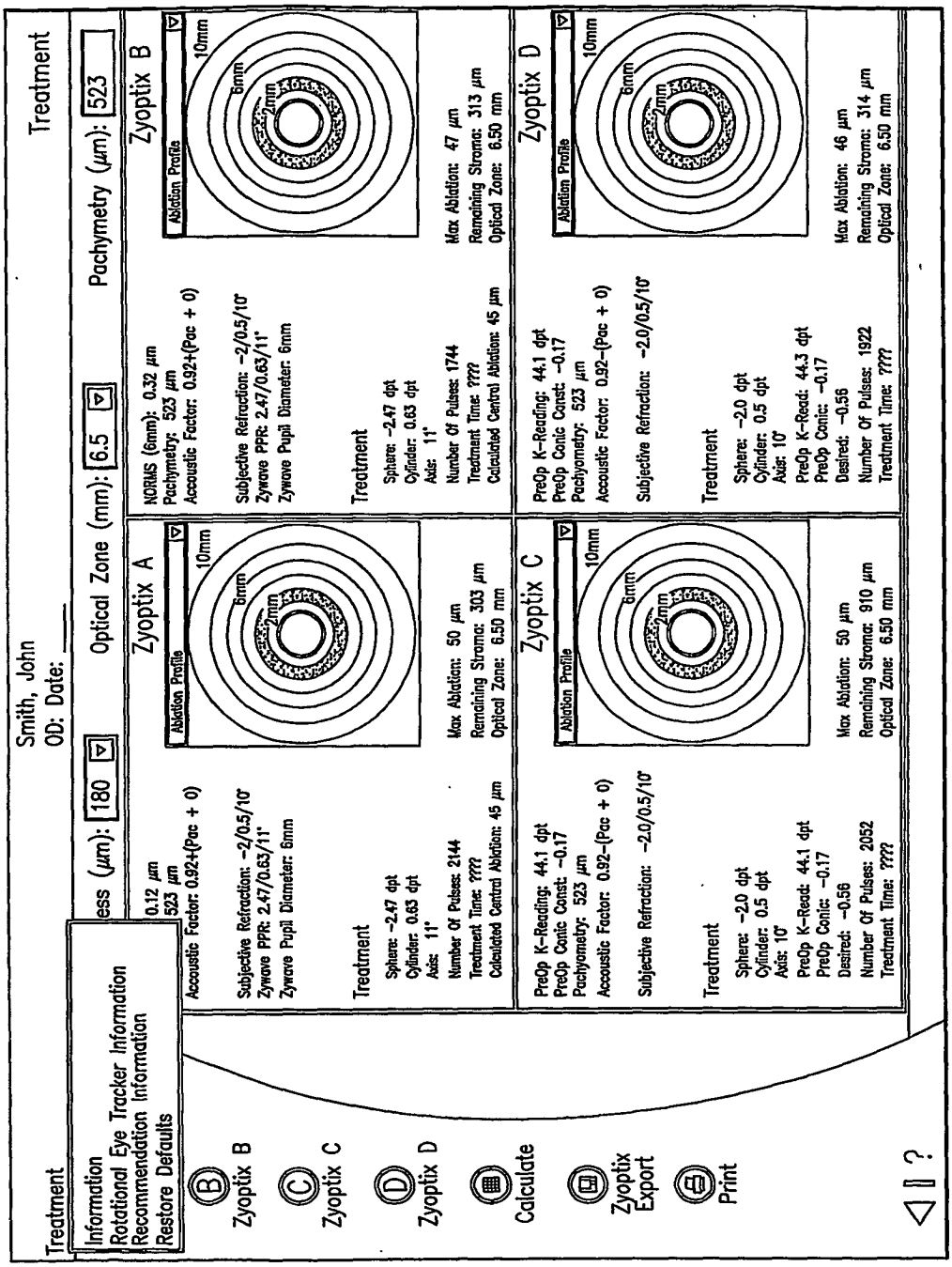
Treatment
Smith, John
OD: Date: ___
Treatment
Information
Rotational Eye Tracker Information
Recommendation Information
Restore Defaults
ess (μm): 180
Optical Zone (mm): 6.5
Pachymetry (μm): 523
Zyoptix A
Zyoptix B
Zyoptix C
Zyoptix D
Ablation Profile
6mm
2mm
10mm
Accoustic Factor: 0.92+(Pac + 0)
0.12 μm
523 μm
Subjective Refraction: -2/0.5/10°
Zywave PPR: 2.47/0.63/11°
Zywave Pupil Diameter: 6mm
Treatment
Sphere: -2.47 dpt
Cylinder: 0.63 dpt
Axis: 11°
Number Of Pulses: 2144
Treatment Time: ????
Calculated Central Ablation: 45 μm
Max Ablation: 50 μm
Remaining Stroma: 303 μm
Optical Zone: 6.50 mm
NORMS (6mm): 0.32 μm
Pachymetry: 523 μm
Accoustic Factor: 0.92+(Pac + 0)
Subjective Refraction: -2/0.5/10°
Zywave PPR: 2.47/0.63/11°
Zywave Pupil Diameter: 6mm
Treatment
Sphere: -2.47 dpt
Cylinder: 0.63 dpt
Axis: 11°
Number Of Pulses: 1744
Treatment Time: ????
Calculated Central Ablation: 45 μm
Max Ablation: 47 μm
Remaining Stroma: 313 μm
Optical Zone: 6.50 mm
PreOp K-Reading: 44.1 dpt
PreOp Conic Const: -0.17
Pachyometry: 523 μm
Accoustic Factor: 0.92-(Pac + 0)
Subjective Refraction: -2.0/0.5/10°
Treatment
Sphere: -2.0 dpt
Cylinder: 0.5 dpt
Axis: 10°
PreOp K-Read: 44.1 dpt
PreOp Conic: -0.17
Desired: -0.56
Number Of Pulses: 2052
Treatment Time: ????
Max Ablation: 50 μm
Remaining Stroma: 910 μm
Optical Zone: 6.50 mm
PreOp K-Reading: 44.1 dpt
PreOp Conic Const: -0.17
Pachyometry: 523 μm
Accoustic Factor: 0.92-(Pac + 0)
Subjective Refraction: -2.0/0.5/10°
Treatment
Sphere: -2.0 dpt
Cylinder: 0.5 dpt
Axis: 10°
PreOp K-Read: 44.3 dpt
PreOp Conic: -0.17
Desired: -0.56
Number Of Pulses: 1922
Treatment Time: ????
Max Ablation: 46 μm
Remaining Stroma: 314 μm
Optical Zone: 6.50 mm
Zyoptix B
Zyoptix C
Zyoptix D
Calculate
Zyoptix Export
Print
313

FIG.7

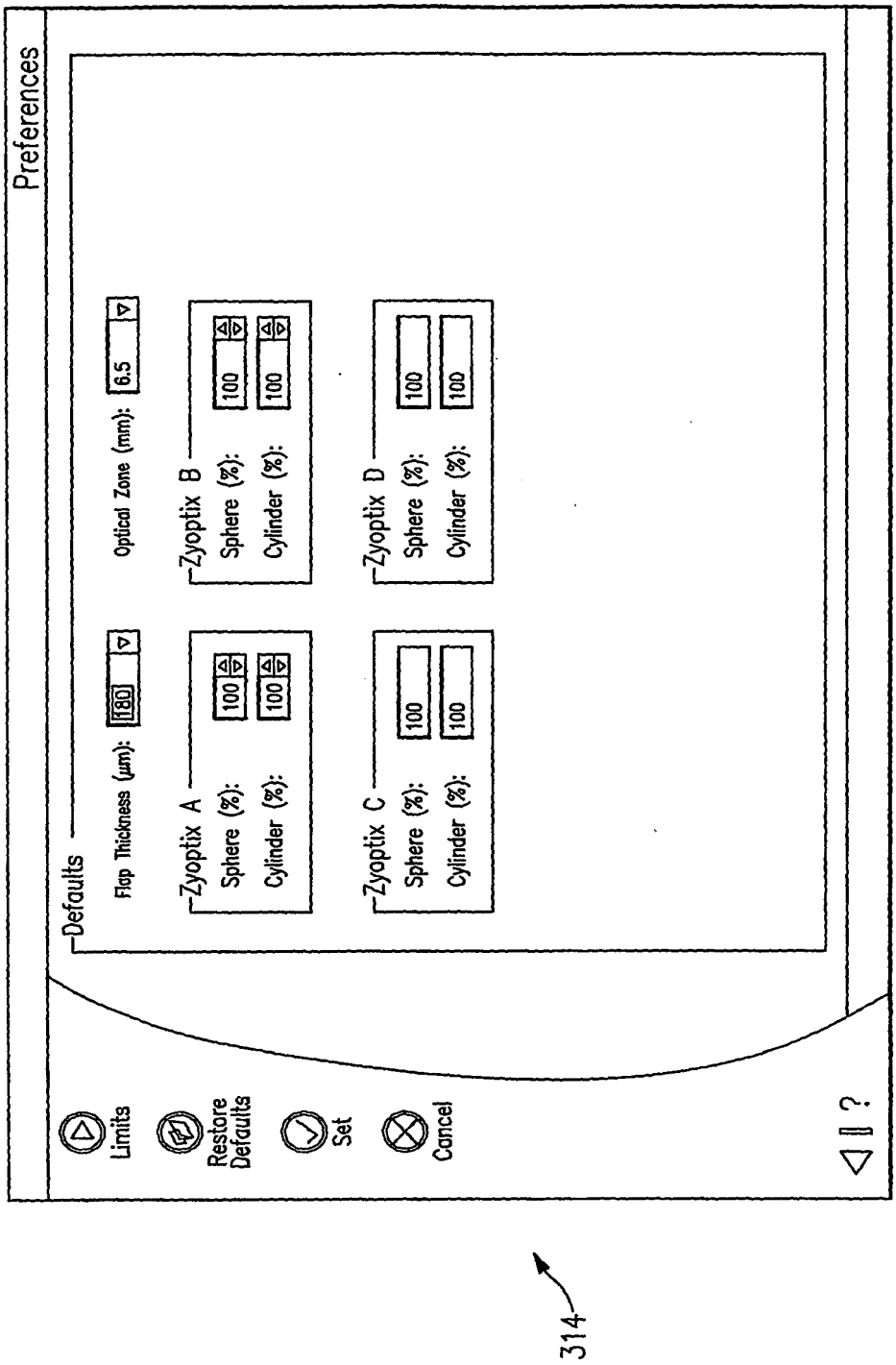
Preferences
Defaults
Flap Thickness (µm):
180
Optical Zone (mm):
6.5
Zyoptix A
Sphere (%):
100
Cylinder (%):
100
Zyoptix B
Sphere (%):
100
Cylinder (%):
100
Zyoptix C
Sphere (%):
100
Cylinder (%):
100
Zyoptix D
Sphere (%):
100
Cylinder (%):
100
Limits
Restore Defaults
Set
Cancel
?
314

FIG.8

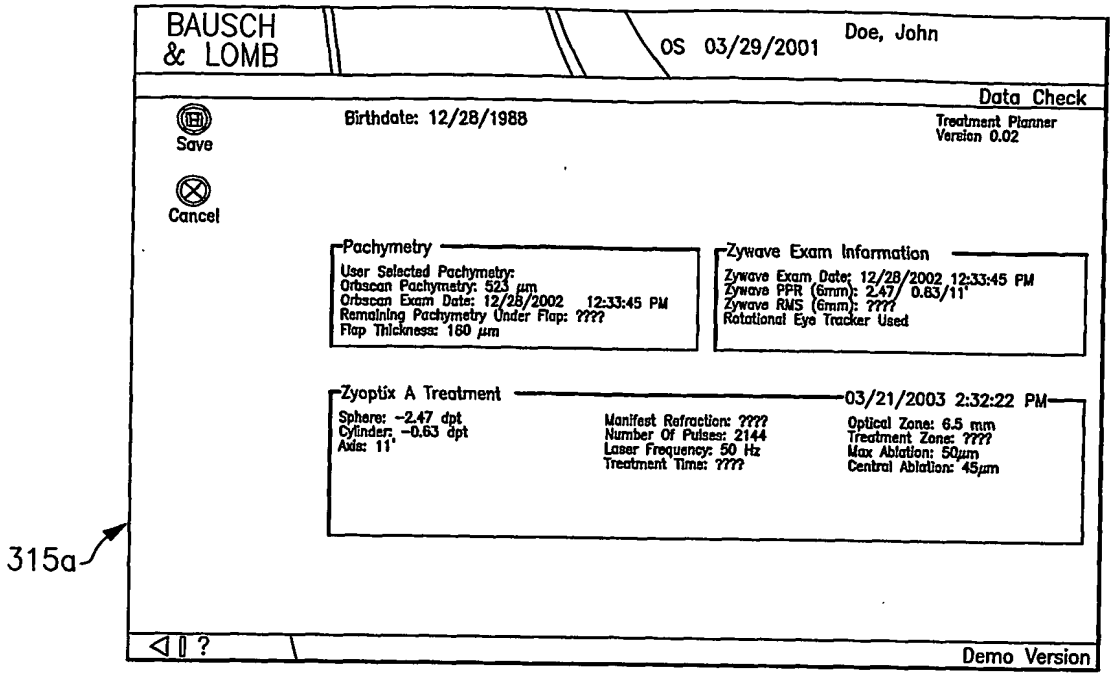
BAUSCH & LOMB
OS 03/29/2001
Doe, John
Data Check
Save
Cancel
Birthdate: 12/28/1988
Treatment Planner Version 0.02
Pachymetry
User Selected Pachymetry:
Orbscan Pachymetry: 523 µm
Orbscan Exam Date: 12/28/2002 12:33:45 PM
Remaining Pachymetry Under Flap: ????
Flap Thickness: 160 µm
Zywave Exam Information
Zywave Exam Date: 12/28/2002 12:33:45 PM
Zywave PPR (6mm): 2.47 / 0.63/11'
Zywave RMS (6mm): ????
Rotational Eye Tracker Used
Zyoptix A Treatment
03/21/2003 2:32:22 PM
Sphere: -2.47 dpt
Cylinder: -0.63 dpt
Axis: 11'
Manifest Refraction: ????
Number Of Pulses: 2144
Laser Frequency: 50 Hz
Treatment Time: ????
Optical Zone: 6.5 mm
Treatment Zone: ????
Max Ablation: 50µm
Central Ablation: 45µm
315a
Demo Version

FIG.9A

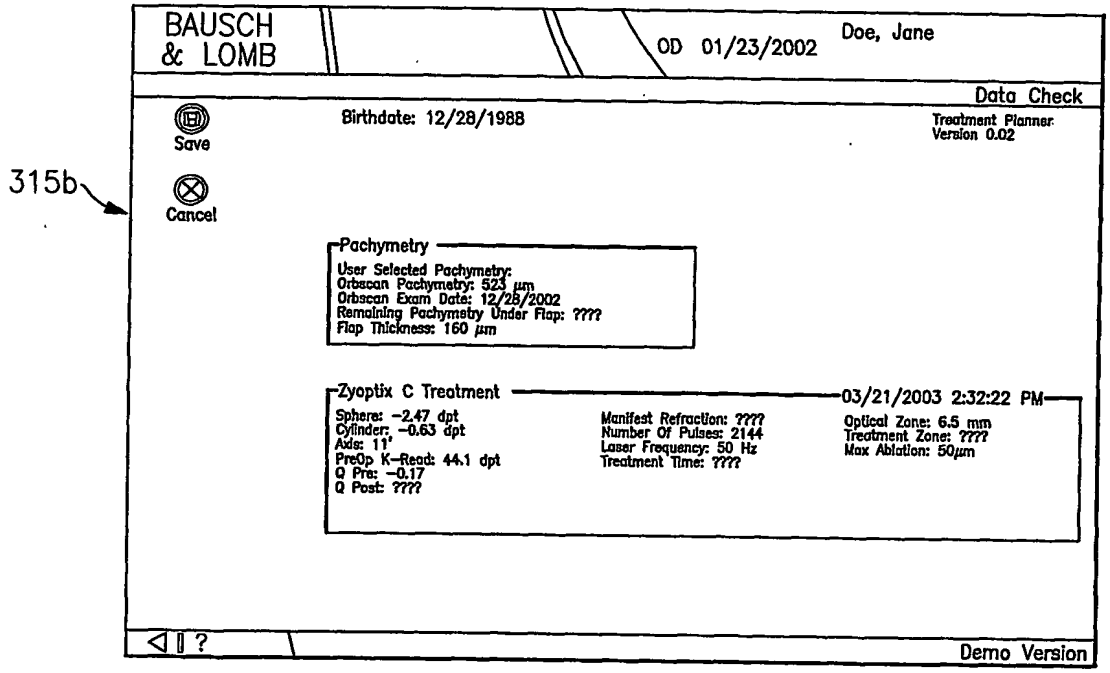
BAUSCH & LOMB
OD 01/23/2002
Doe, Jane
Data Check
Save
Cancel
Birthdate: 12/28/1988
Treatment Planner Version 0.02
315b
Pachymetry
User Selected Pachymetry:
Orbscan Pachymetry: 523 µm
Orbscan Exam Date: 12/28/2002
Remaining Pachymetry Under Flap: ????
Flap Thickness: 160 µm
Zyoptix C Treatment
03/21/2003 2:32:22 PM
Sphere: -2.47 dpt
Cylinder: -0.63 dpt
Axis: 11'
PreOp K-Read: 44.1 dpt
Q Pre: -0.17
Q Post: ????
Manifest Refraction: ????
Number Of Pulses: 2144
Laser Frequency: 50 Hz
Treatment Time: ????
Optical Zone: 6.5 mm
Treatment Zone: ????
Max Ablation: 50µm
Demo Version

FIG.9B

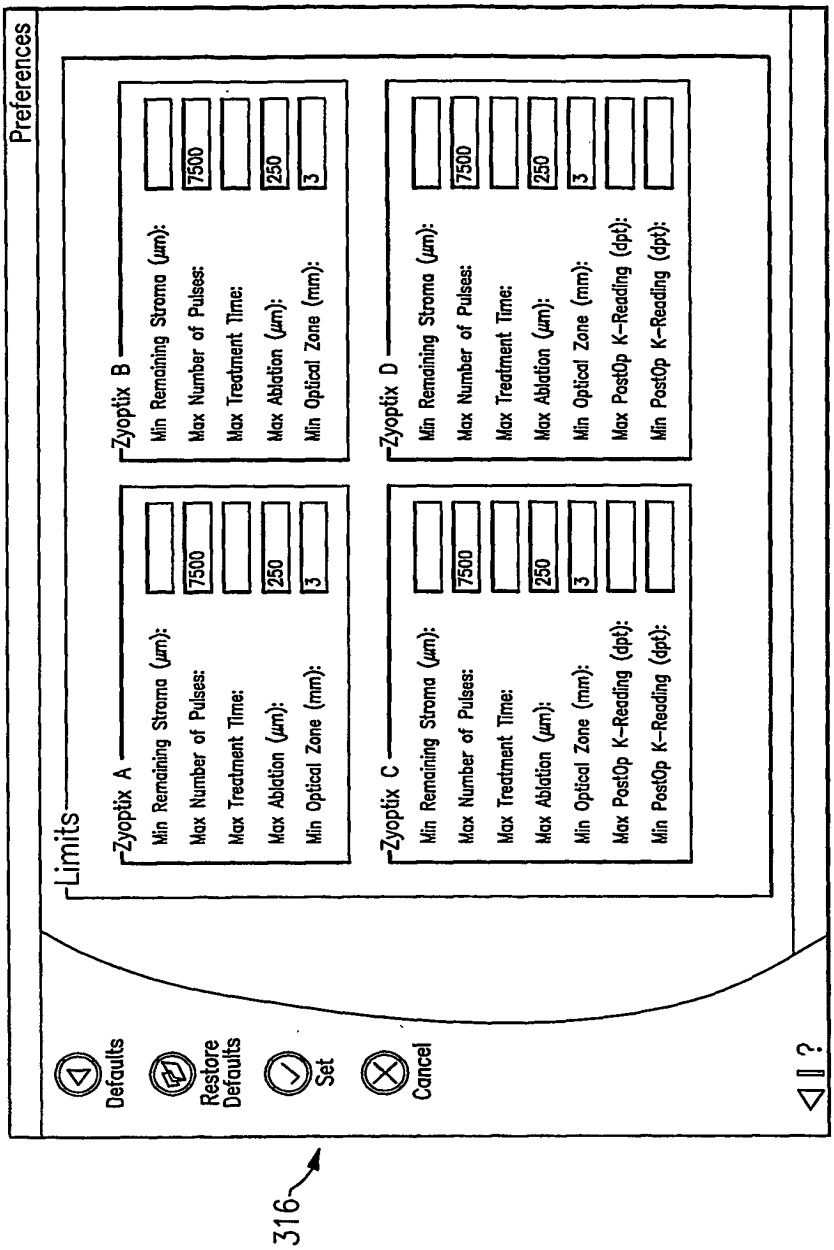
Preferences
Limits
Zyoptix A
Min Remaining Stroma (µm):
Max Number of Pulses: 7500
Max Treatment Time:
Max Ablation (µm): 250
Min Optical Zone (mm): 3
Zyoptix B
Min Remaining Stroma (µm):
Max Number of Pulses: 7500
Max Treatment Time:
Max Ablation (µm): 250
Min Optical Zone (mm): 3
Zyoptix C
Min Remaining Stroma (µm):
Max Number of Pulses: 7500
Max Treatment Time:
Max Ablation (µm): 250
Min Optical Zone (mm): 3
Max PostOp K-Reading (dpt):
Min PostOp K-Reading (dpt):
Zyoptix D
Min Remaining Stroma (µm):
Max Number of Pulses: 7500
Max Treatment Time:
Max Ablation (µm): 250
Min Optical Zone (mm): 3
Max PostOp K-Reading (dpt):
Min PostOp K-Reading (dpt):
Defaults
Restore Defaults
Set
Cancel
?
316

FIG.10

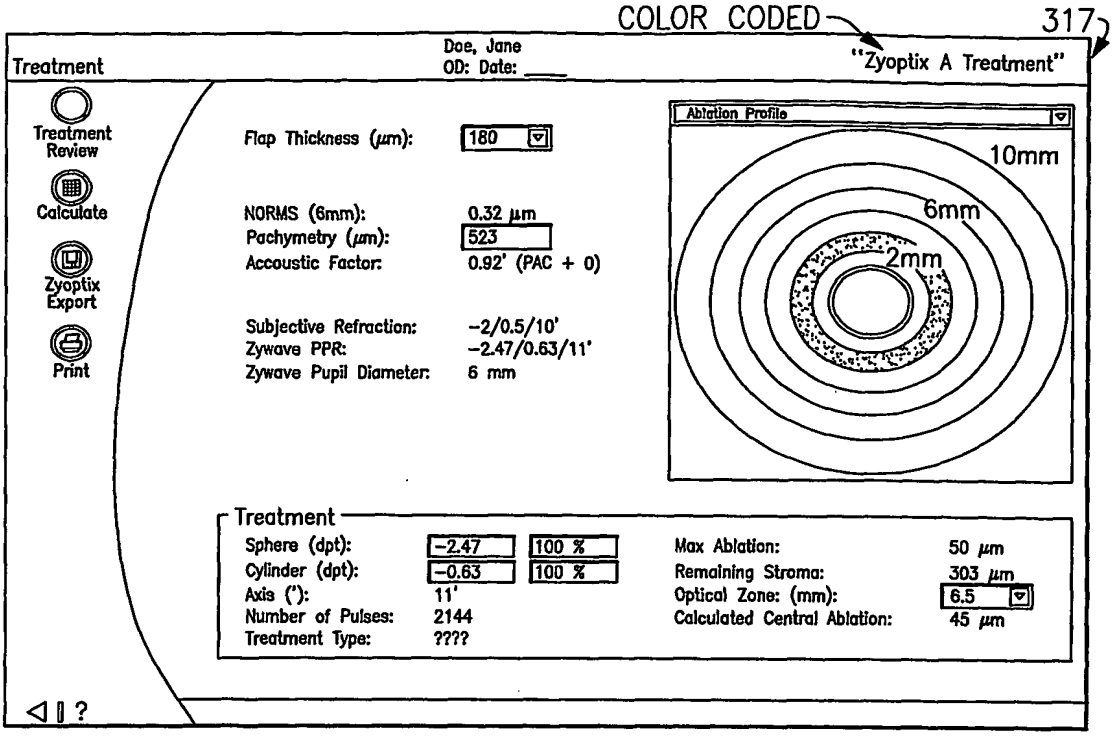

FIG.11A

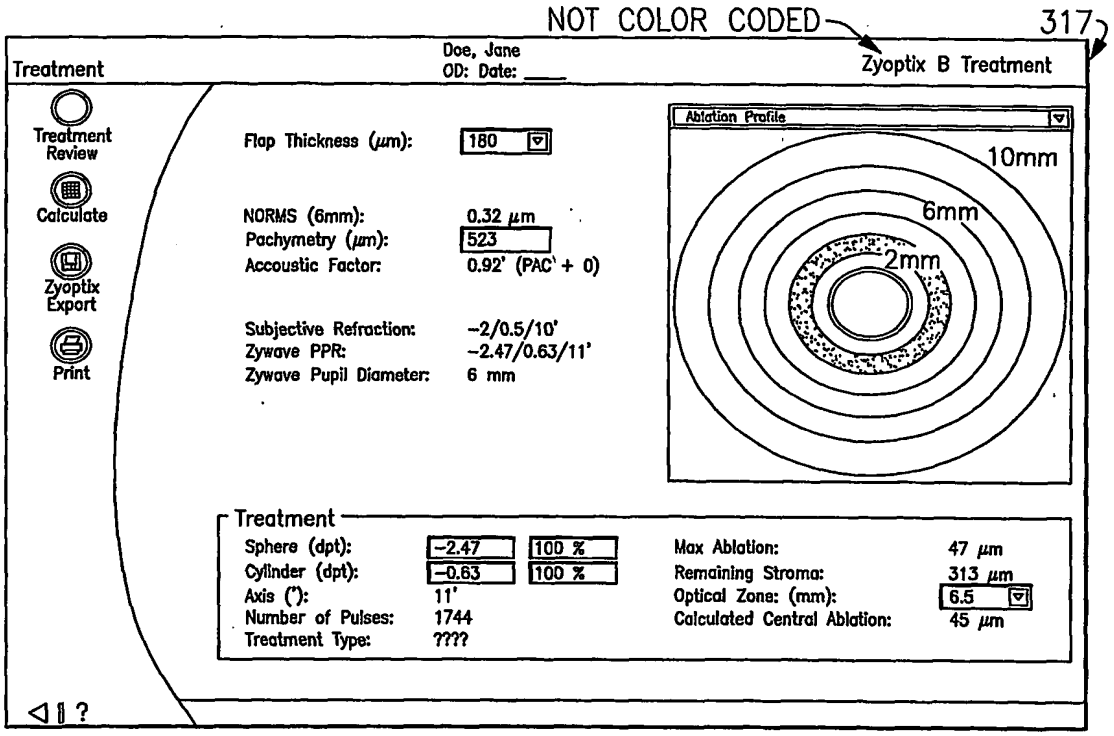

FIG.11B

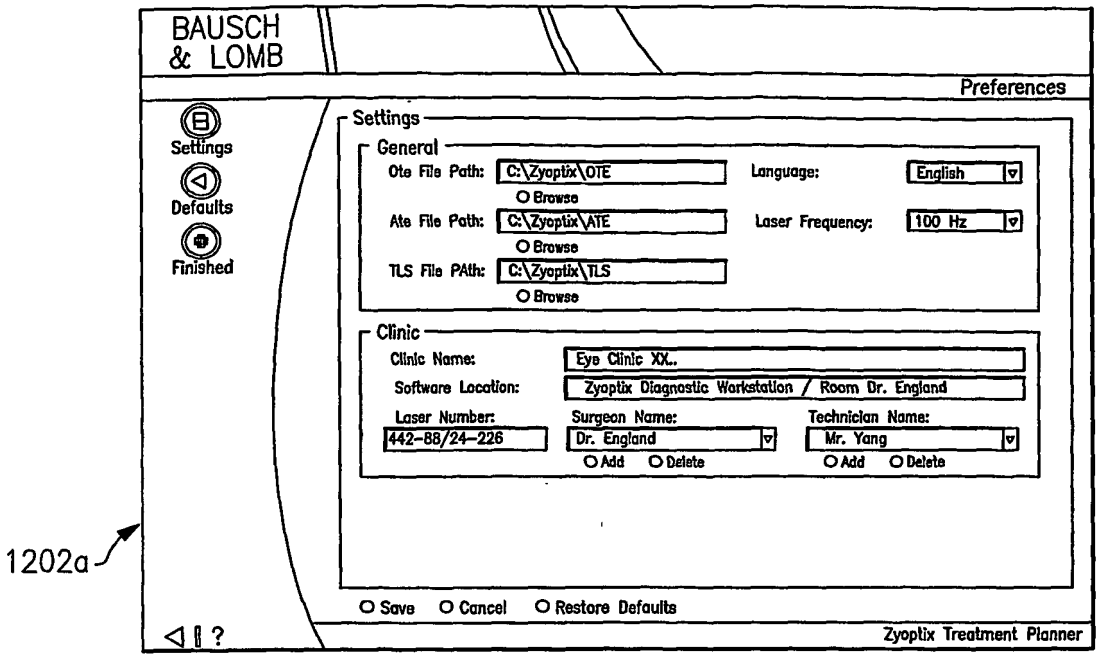

FIG.12A

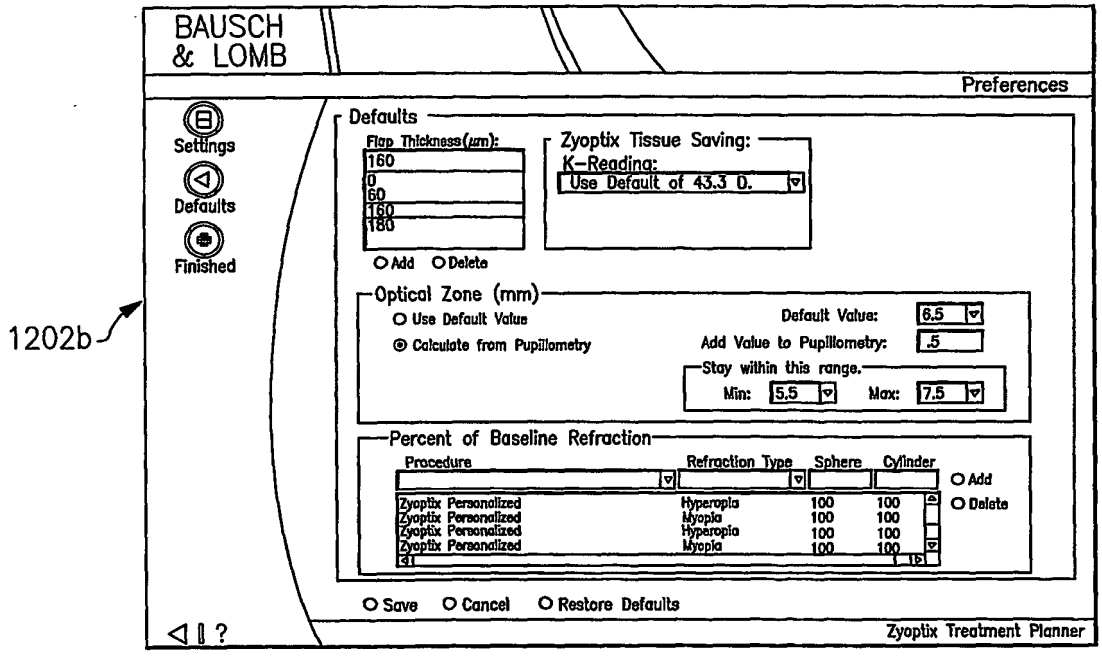

FIG.12B

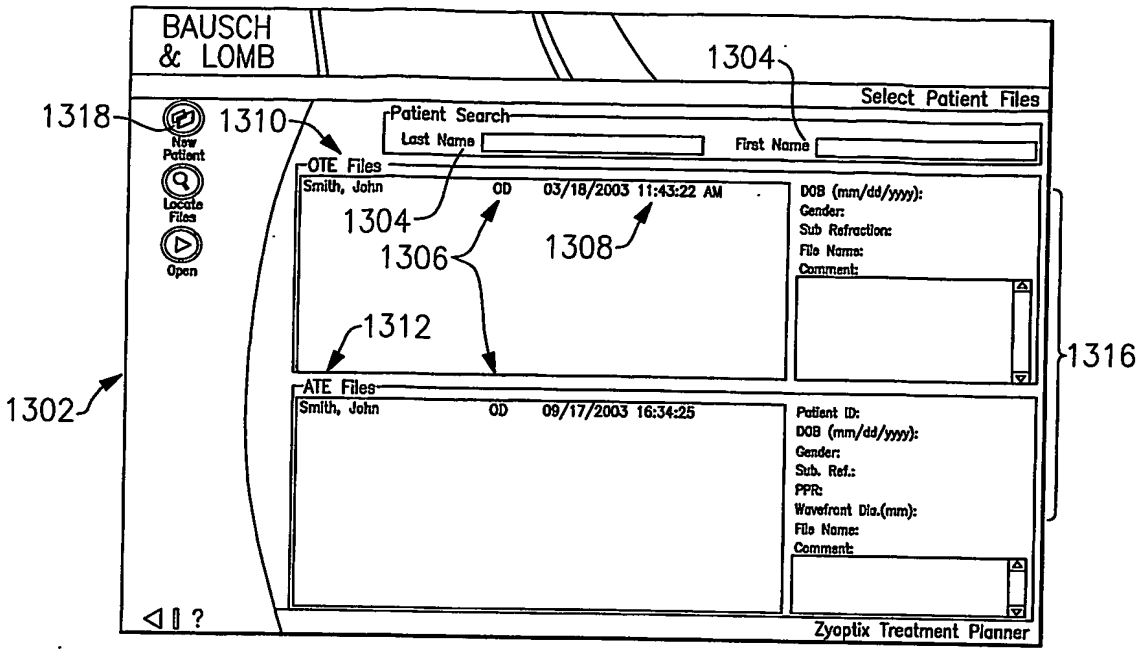
BAUSCH & LOMB
1304
Select Patient Files
1318
1310
New Patient
Locate Files
Open
Patient Search
Last Name
First Name
OTE Files
Smith, John OD 03/18/2003 11:43:22 AM
1304
1306
1308
1312
DOB (mm/dd/yyyy):
Gender:
Sub Refraction:
File Name:
Comment:
1316
1302
ATE Files
Smith, John OD 09/17/2003 16:34:25
Patient ID:
DOB (mm/dd/yyyy):
Gender:
Sub. Ref.:
PPR:
Wavefront Dia.(mm):
File Name:
Comment:
Zyoptix Treatment Planner

FIG.13

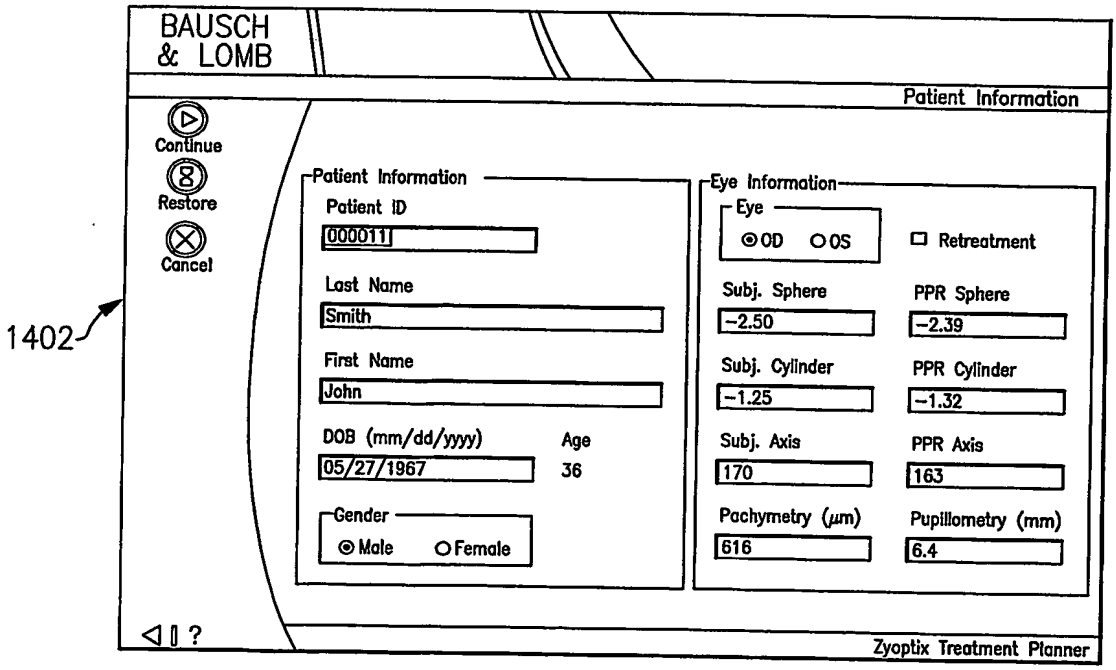
BAUSCH & LOMB
Patient Information
Continue
Restore
Cancel
1402
Patient Information
Patient ID
000011
Last Name
Smith
First Name
John
DOB (mm/dd/yyyy)
05/27/1967
Age
36
Gender
Male
Female
Eye Information
Eye
OD
OS
Retreatment
Subj. Sphere
-2.50
PPR Sphere
-2.39
Subj. Cylinder
-1.25
PPR Cylinder
-1.32
Subj. Axis
170
PPR Axis
163
Pachymetry (μm)
616
Pupillometry (mm)
6.4
Zyoptix Treatment Planner

FIG.14

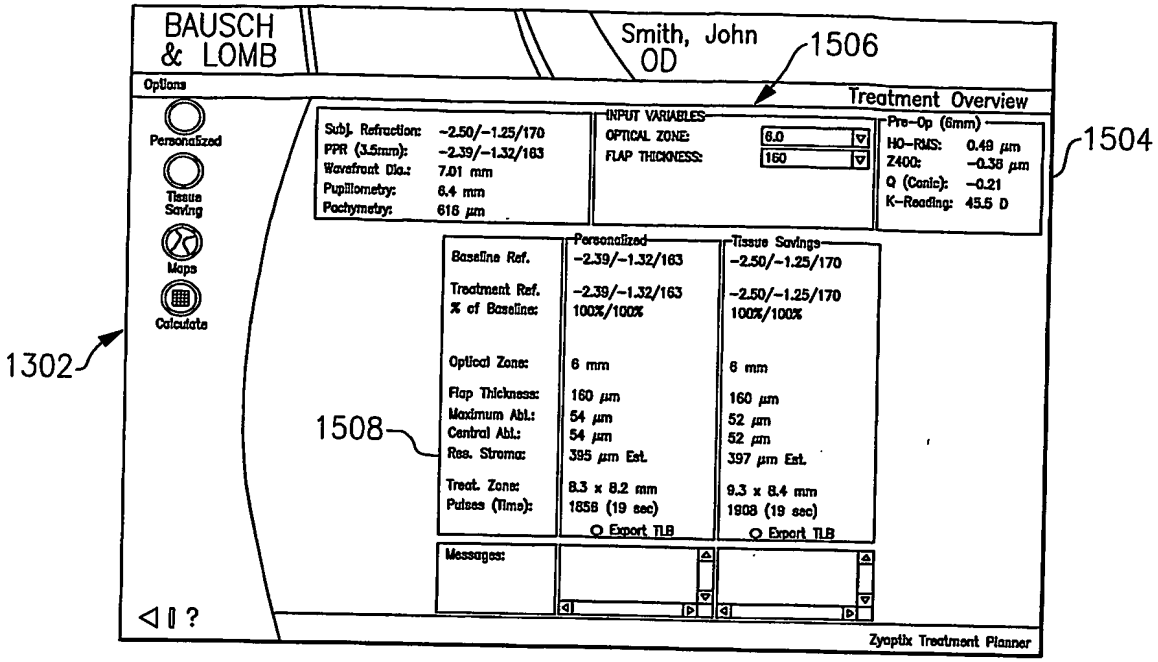
BAUSCH & LOMB
Smith, John
OD
1506
Options
Treatment Overview
Personalized
Tissue Saving
Maps
Calculate
1302
Subj. Refraction: -2.50/-1.25/170
PPR (3.5mm): -2.39/-1.32/163
Wavefront Dia.: 7.01 mm
Pupillometry: 6.4 mm
Pachymetry: 616 µm
INPUT VARIABLES
OPTICAL ZONE: 6.0
FLAP THICKNESS: 160
Pre-Op (6mm)
HO-RMS: 0.49 µm
Z400: -0.38 µm
Q (Conic): -0.21
K-Reading: 45.5 D
1504
Personalized
Tissue Savings
Baseline Ref. -2.39/-1.32/163 -2.50/-1.25/170
Treatment Ref. -2.39/-1.32/163 -2.50/-1.25/170
% of Baseline: 100%/100% 100%/100%
Optical Zone: 6 mm 6 mm
Flap Thickness: 160 µm 160 µm
Maximum Abl.: 54 µm 52 µm
Central Abl.: 54 µm 52 µm
Res. Stroma: 395 µm Est. 397 µm Est.
1508
Treat. Zone: 8.3 x 8.2 mm 9.3 x 8.4 mm
Pulses (Time): 1858 (19 sec) 1908 (19 sec)
Export TLB
Export TLB
Messages:
Zyoptix Treatment Planner

FIG.15

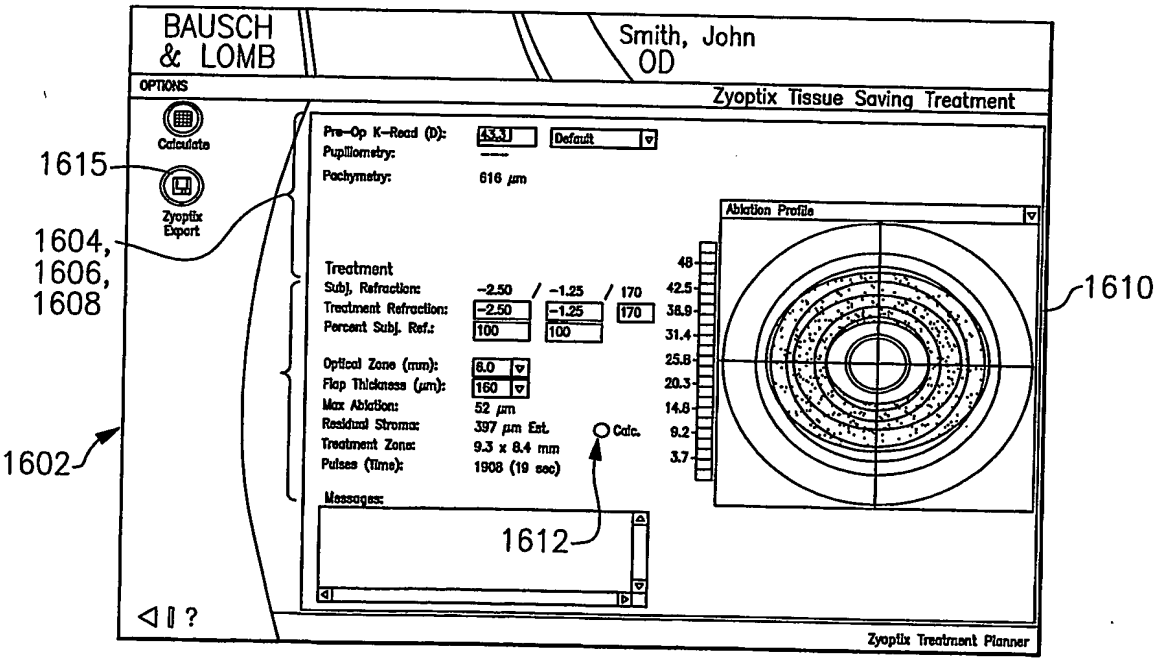
BAUSCH & LOMB
Smith, John
OD
OPTIONS
Zyoptix Tissue Saving Treatment
Calculate
1615
Zyoptix Export
1604, 1606, 1608
Pre-Op K-Read (D): 43.31 Default
Pupillometry:
Pachymetry: 616 µm
Ablation Profile
Treatment
Subj. Refraction: -2.50 / -1.25 / 170
Treatment Refraction: -2.50 -1.25 170
Percent Subj. Ref.: 100 100
Optical Zone (mm): 6.0
Flap Thickness (µm): 160
Max Ablation: 52 µm
Residual Stroma: 397 µm Est.
Treatment Zone: 9.3 x 8.4 mm
Pulses (Time): 1908 (19 sec)
Calc.
48
42.5
36.9
31.4
25.8
20.3
14.8
9.2
3.7
1610
1602
Messages:
1612
Zyoptix Treatment Planner

FIG.16

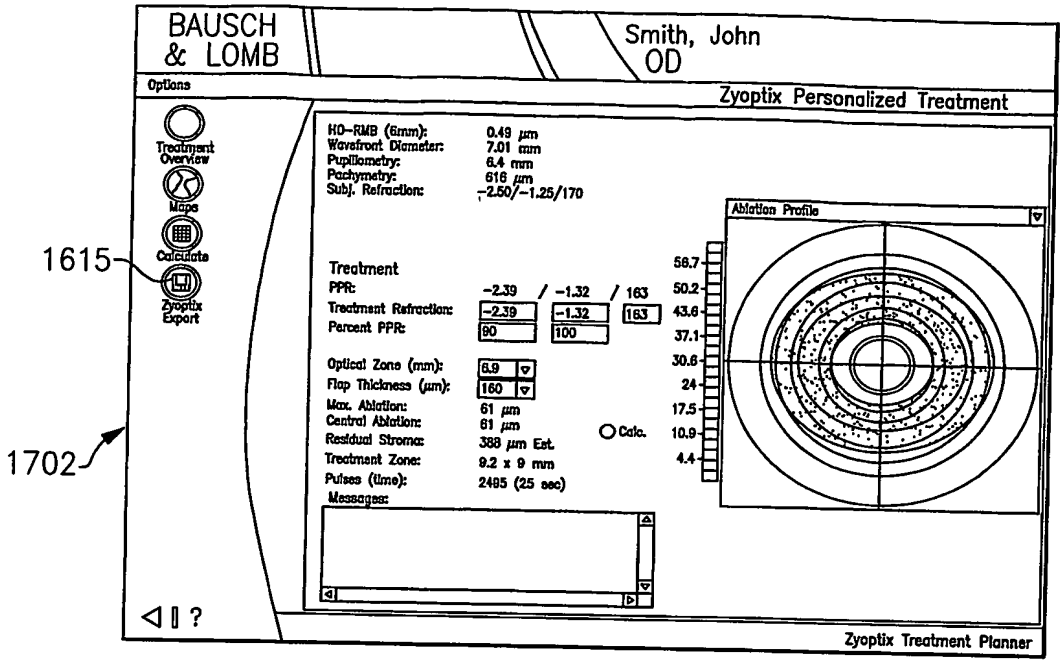

FIG.17

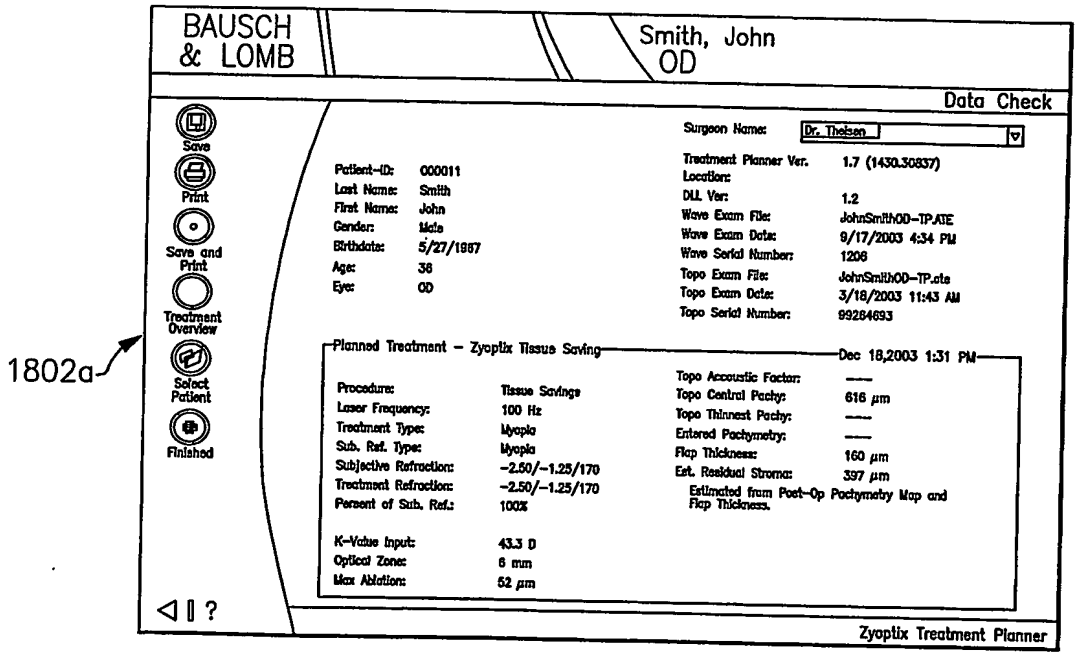

FIG.18A

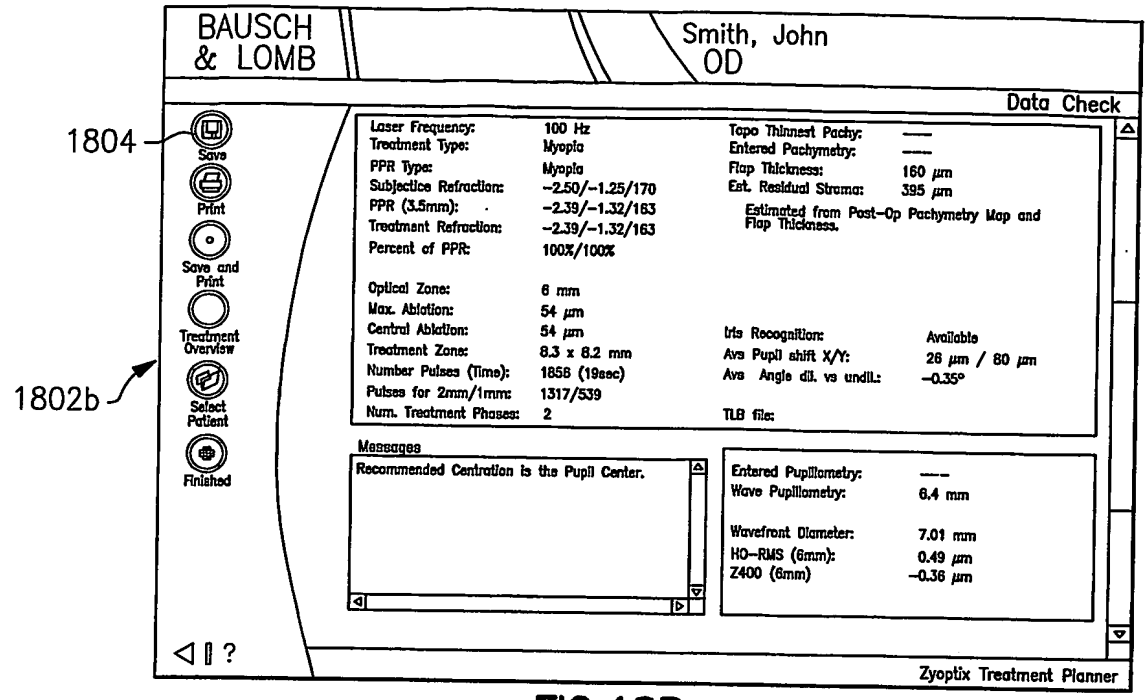

FIG.18B

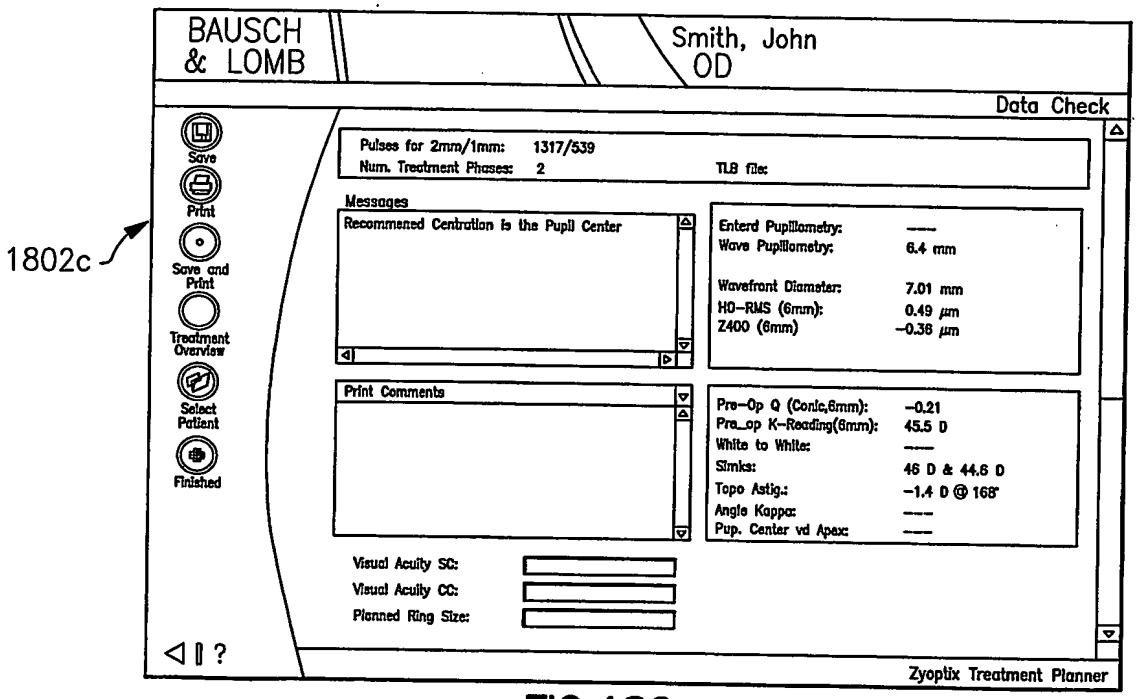

FIG.18C